ECO225: Data Tools for Economists

Instructor:	Prof. Khazra	**Email:**	nazanin.khazra@utoronto.ca
Sections:	L0101 and L0201	**Times:** TR9-11 online	
TAs:	Posted on Quercus	**Tutorials:** Posted on Quercus	
Course email*:	eco225.khazra@utoronto.ca	*shared with the TAs	

Important: please check your Quercus daily and make sure notifications is on. Read the syllabus thoroughly, mark your calendars with important dates, and familiarize yourself with course rules regularly.

1   Course Description

This course explores unstructured data sources such as text files, webpages, social media posts, satellite imagery, and how economists harness these types of data. It offers a practical introduction to creating datasets from these types of sources (for example, via web scrapping), linking data sources, and managing and visualizing these data (for example, via geospatial visualization).

The exercises in the course will require Python programming. Previous experience in this language is helpful but not necessary. Students that have no experience with Python can use this course as a starting point.

1.1   Required Text and Software

All textbooks and learning materials are available online for free. I use a different source for each section. Here are some useful references that we will selectively use in our course.

- Provided lecture notes and Jupyter notebooks

- Pro Git (Scott Chacon, Ben Straub, 2nd edition) https://git-scm.com/book/en/v2

- Introduction to Statistical Learning with Applications in R (James, Witten,Hastie, Tibshirani, 2013) http://faculty.marshall.usc.edu/gareth-james/ISL/

- Videos, slides and other material posted on Quercus

- We will mainly use Python and Jupyter notebook.

Prerequisites

ECO100Y1(67%)/(ECO101H1(63%), ECO102H1(63%))/ECO105Y1(80%);
MAT133Y1(63%)/(MAT135H1(60%), MAT136H1(60%))/ MAT137Y1(55%)/MAT157Y1(55%);
CSC108H1/CSC148H1

2 Online Delivery Requirements

This course is going to be delivered in an online format. The lectures will be a combination of pre-recorded and live synchronous lectures and will be posted on Quercus. Office hours are online.

You need high-speed internet, a PC or laptop.

- Keep a calendar with due dates. All times will be posted in local Toronto time, and confusion over time zones will not be considered an appropriate excuse for missing a deadline. Take-home assignments are due at 7:00 pm Toronto time on the due date.

3 Course Rules

3.1 Email Policy

Before you start writing an email to a member of the course staff:

- Please make sure your question is not already answered in the syllabus or announcements on Quercus

- If this is a coding question:

    First, try to Google the error that you get (e.g., copy and paste it into Google). Since Python is an open-source program, most of your questions have already been answered on the web.

    If you could not fix the issue, post it on our discussion platform. Your classmates can learn from your questions. We value active participation (asking and answering questions) on our discussion platform.

    At last, if you still need more help, send an email to eco225.khazra@utoronto.ca

- If you are sending an email to me regarding a private matter, the title of your email must contain **"ECO225"** to be seen

- Use your UT email address in all your communications

- Do not reply to announcement emails

- Again, email is mainly for private communications. For content-focused questions, please use office hours. An alternative way to get answers, show participation, and benefit your classmates is to use the discussion platform.

I try to answer your emails within three business days. We will check our discussion board platform regularly throughout the week.

3.2 Technical Difficulties Policy

We will not accept missed work due to technical difficulty, deadline confusion, internet, or hardware problems. You can (but try not to) miss one weekly assignment during the semester. Please find the details in the Assignments and Projects section. Keep these options for unforeseen technical difficulties, illness, or other incidents.

4 Course Structure

4.1 Lectures

I will post lectures recordings on Quercus each week. **Do not share any of the course material.** *Course videos and materials belong to your instructor, the University, and/or other sources depending on the specific facts of each situation, and are protected by copyright.* In this course, you are permitted to download session videos and materials for your own academic use, but you should not copy, share, or use them for any other purpose without the explicit permission of the instructor.

We are also going to have synchronous lecture sessions as needed. Dates of the online sessions will be announced on Quercus. The primary purpose of having the live lectures is to complement the posted material and, most importantly, to have in-person interactions. Some of the to-be-announced live lectures, including your participation, will be recorded on video and available to students in the course for viewing remotely and after those sessions. If I want to record a live session, I will give you notice.

We will provide the lab code and explanation for each week's material. You should run these labs each week after or before the lecture and use them to submit your exercises and your projects.

4.2 Office Hours

We do not have lecture-based tutorials in this class. However, office hours are going to have the same functionality. You should use office hours to clarify questions that you may have about the material, exercises, and your projects.

	Time*	Held by	By Appointment
Non-content consultation**	Thurs. 1:00PM-2:00PM	Instructor	Yes
Content office hours	Thurs. 11:00AM-12:00PM	Instructor	No
Content office hours	Check Quercus	TAs	No

* Make sure to check Quercus for updated details on office hours schedule and for the join links.

** Content questions will not be answered during non-content office hours.

4.3 Assignments and Projects

Item	Weight	Due Dates	Timing
Lab Exercises*	32%	Most Fridays	Take-home
Term project 1**	12%	Wed. Oct 7	Take-home
Term project 2	12%	Wed. Oct 28	Take-home
Term project 3	12%	Wed. Nov 25	Take-home
Final Project	20%	TBD	Take-home
Participation	10%		-
Resume Submission	2%	Sep. 25 & Nov. 27	Take-home

All times mentioned in the table above are Toronto times. Assignments are due at **7:00 PM** of the due date.

Special Accommodation

In case you have to miss an assignment or a project due to illness, technical difficulties, etc., you can use the special accommodation described below. You are strongly advised only to use them if necessary.

 * Your **lowest exercise mark** will be dropped. If you miss more than one exercise for any reason, they will be marked as zero.

 ** If you have to miss a term project for a medical reason, your **missed project's weight** will be distributed between your other two projects. If you miss more than one term project, it will be marked as zero.

Let's work through some of the implications of this policy.

- For the first term project you miss, there is no need to self-report any reason or illness. No documentation needed/accepted. The weight of the missed project is going to be distributed between your two other projects.

- If you miss a subsequent project, you may want to consider dropping the course as you will receive a zero for that project. In the case of extraordinary circumstances, contact your college's Registrar's Office. The only possibility of adjusting the marking policy would be the result of our consultation with your college's Registrar.

- We point out there is absolutely no benefit to missing a term project, even if you cannot submit a perfectly polished work.

- Further, missing a term project is risky as you do not know what the future holds. Assume that for whatever reason, you are going to be forced to miss the Final project.

4.3.1 Resume Submission

You are going to submit your resume twice. Once at the beginning of the semester, and the second time at the end of the semester. We are going to provide examples and guidelines on how your resume should look like. Your first resume is going to be evaluated based on the quality and format of the file. In the second submission, you should add your added skills from this course and other courses you took this semester. The guidelines will be posted similarly. Believe me; you will need to send them out to job applications soon!

4.3.2 Participation

You should consistently participate in the course. Your participation in the course is based on your presence and activity during office hours and the discussion platform. This course is project-based, and students encounter different issues; you can increase your participation grade by answering your friends' questions and asking your questions on the platform. In addition to these mandatory activities, you can also show your participation in other ways by engaging in opportunities announced during the semester.

4.3.3 Exercises

Exercises are included in your lab for the week. You should run the lab, learn the code and concepts, and then finish each week's exercises right after.

4.3.4 Term Projects and The Final Project

You will have three term-projects and a final project. In these projects, you use the provided code and data to finish the defined tasks. We will give you detailed instructions on the steps required to complete each project. We will also provide feedback on your work, which you should then incorporate and perform the changes that we request. Make sure to address the comments you receive for each project, because you need them for your final project. In the final project, we will add some new parts, and we will also go back and check if you have incorporated our comments into your term projects.

Details about the project will be provided closer to the deadline.

4.3.5 Projects Late Submission Policy

Late Project submissions will be **penalized by day**. There is a grace period of 15 min, which is advised to be reserved for technical difficulties. After that 15 min, there is a **20% penalty** for each calendar day of late submission. For instance, if the project is due at 7:00 PM of a Wednesday, all the late requests until Thursday 7:00 PM will incur a 20% point late penalty. No submissions will be accepted five calendar days after the deadline.

Early project submission is encouraged. You will receive an early-bird bonus of 0.5% point to your term project if you submit the project more than 24 hours before the deadline.

4.3.6 Remarking Policy

Students should make such requests as soon as reasonably possible after receiving the work back, but no later than two weeks after it was returned. If a TA originally marked the work, the remarking request should go first to the TA, and any appeal of that should go to the course instructor. Such a request entails a remarking of the work. Hence, if a remarking is granted, the student must accept the resulting mark as the new mark, whether it goes up or down or remains the same. Continuing with the remark or the appeal means the student accepts this condition.

5 Ongoing Learning Disability or Accommodation Requirement

If you have an ongoing disability issue or you need accommodation, please register with Accessibility Services (AS) (accessibility.utoronto.ca) at the beginning of the academic year. After AS processes your request, we will coordinate to provide the required accommodations for you.

6   Academic Integrity

The University of Toronto is deeply committed to the free and open exchange of ideas, and to the values of independent inquiry. As such, academic integrity is also fundamental to the Universityâs intellectual life. What does it mean to act with academic integrity? U of T supports the International Center for Academic Integrityâs definition of academic integrity as acting in all academic matters with honesty, trust, fairness, respect, responsibility, and courage. Please visit academicintegrity.utoronto.ca for smart strategies and information on academic integrity processes and procedures at the University of Toronto. The website includes a link to decisions of the University Tribunal in student cases involving academic integrity. You can review the Code of Behaviour on Academic Matters in its entirety here.

Common forms of academic misconduct with code references include:

- Possession or use of unauthorized aids (B.I.1.b)

- Impersonation (B.I.1.c)

- Plagiarism (B.I.1.d)

    Plagiarism is a serious instance of academic misconduct, and university policy explicitly stipulates that ignorance of what constitutes plagiarism is not an acceptable defense.

- Submission of work for which credit has previously been obtained (B.I.1.e)

- Submission of work containing purported statement(s) of fact or reference(s) to concocted sources (B.I.1.f)

- Assisting another student in committing an offence (B.II.1.a)

7   Schedule and Weekly Learning Goals

The schedule is tentative and subject to change. We will try to cover as much of the material as time allows. This schedule should be viewed as a road map to the fundamental concepts that students should learn and study before each assignment.

Week 1: Introduction to Python, Jupyter notebook

Week 2: Linking Different Data Sources

Week 3: Github

Week 4: Data Visualization

Week 5: Mapping with Python and GIS Mapping

Week 6: Satellite Data and Geospatial Visualization

Week 7: HTML-based Web Scraping

Week 8: API-based Web Scraping

Week 9: Working with Text

Week 10: Linear Regression

Week 11: Introduction to Machine Learning

Week 12: Simulation (if time allows)

8 The Final Word

"A university is a place where the universality of the human experience manifests itself."
Albert Einstein

Everyone is welcome in this class. We should all actively try to create an inclusive environment to give everyone equal chances to grow. I can't do this alone and need your help to achieve this mission. Try to connect with as many of your classmates as the online world allows and welcome new ideas, perspectives, and identities.
I look forward to meeting you all!